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CLAIMS

We claim:

- 10 1. A process for treating gas, water, or soil containing heavy metals by the step of contacting the heavy metal containing gas, water, or soil with a multi-functional sequestration agent selected from the group consisting of bauxite and modified bauxite.
- 15 2. A process for treating gas, water, or soil with bauxite in its natural or relatively natural form.
3. The process according to Claim 1, wherein the bauxite is modified by the steps of wetting with water, mild heating to temperatures below 300°C, and/or soaking in
20 solutions of common acids, bases, or salts.
4. The process according to Claim 1, wherein when bauxite is applied for treatment of gases, sulfur is an essential ingredient in the co-precipitation of pollutant metals as sulfides.
- 25 5. The process according to Claim 1, wherein sulfur is present in the gas stream being treated or has been introduced into the treatment with the bauxite.
6. The process according to Claim 1, wherein when bauxite is applied to water or
30 soil, sulfur is not an essential ingredient for removal of metal pollutants.
7. The method according to Claim 1, wherein said multi-functional sequestration agent ore is formed into a permeable vertical barrier.

8. The method according to Claim 1, wherein said multi-functional sequestration agent is formed into a permeable horizontal barrier or cap.

5 9. The method according to Claim 1, wherein said multi-functional sequestration agent is mixed with the environmental media to be cleaned.

10. A method for removing or inactivating microorganisms in an emission or in the environment comprising contacting the microorganism with a mineral
10 selected from bauxite, copper ores, and mixtures thereof.